TITLE 24 MEASURE INFORMATION TEMPLATE

Contact Information:
SunOptics

DISCRIPTION

Prescribe daylighting all areas directly under a roof with skylights, in buildings over 200-sq. ft.. The skylight to floor area ratio must be sufficient to allow the electric lighting to be replaced 60% of the daylight hours, on an annualized basis.

BENEFIT

Daylighting these buildings will reduce electric lighting consumption substantially year round. From a TDV point of view, the electric savings occur during 70% of the peak electric demand hours.

ENVIRONMENTAL IMPACT

Daylighting creates no greenhouse gases, and no air or water pollution.
Daylighting reduces the need for new power plant construction.
Daylighting can save 60% to 70% of electric lighting energy during the daylight hours.

TYPE OF CHANGE

The change is prescriptive and expands the scope of the standard.

MEASURE AVAILABILITY AND COST

Skylights are readily available, have been used and proven to be reliable over several decades. The skylight industry can produce as many skylights as would be required by prescribing daylighted buildings.

The cost of daylighting buildings can vary substantially. Non-conditioned factory and warehouse space can be daylighted for about $0.30 per sq. ft. of floor area. The cost of daylighting conditioned space, like WAL*MART stores, is about $0.55 per sq. ft. of floor area. More complicated applications can increase the cost to $2.00 per sq. ft. of floor area.

A single area lighting control can cover a large or small area at the same cost. When covering a large area, say 100,000 sq. ft. the cost could be as little as $0.004 per sq. ft.. In small areas the cost could be as high as $0.45 per sq. ft. of floor area.

USEFUL LIFE, PERSISTANCE AND MAINTENANCE

The useful life of acrylic skylights is well over 30 years with practically no fall off in effectiveness. In excessively dirty areas washing the exterior from time to time would be required to maintain the maximum benefit. Generally, seasonal rain will be sufficient to wash off the accumulated dust.

PERFORMANCE VERIFICATION

Performance can be verified with a simple light meter to compare indoor illuminance to outdoor illuminance. Automatic dimming and/or switching can be verified with a temporary wattmeter on the electric lighting circuits.

COST EFFECTIVENESS

The cost effectiveness will vary with electric rates, the lighting power density, the building use schedule and the cost of the skylight installation. Simple return on investment can be as short as one year but usually under five years.

ANALYSIS TOOLS

Skycalc-----?

RELATIONSHIP TO OTHER MEASURES

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BIBLIOGRAPHY AND OTHER RESEARCH

The California State Automobile Association in Antioch, California, a PG&E ACt2 energy efficiency demonstration project.